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(12) UK Patent Application

(19) GB (11) 2 244 429 (13) A

(43) Date of A publication 04.12.1991

(21) Application No 9110968.6

(22) Date of filing 21.05.1991

(30) Priority data

(31) 901265

(32) 21.05.1990

(33) DK

**(51) INT CL⁶
A47G 27/02**

**(52) UK CL (Edition K)
A4S S1J**

(56) Documents cited

GB 2144038 A GB 2098961 A GB 2056271 A

(71) Applicant

Milliken Denmark A/S

(Incorporated in Denmark)

DK-8544 Mørke, Denmark

(58) Field of search

**UK CL (Edition K) A4S
INT CL⁶ A47G
WPI**

(72) Inventor

Aage Lang

(74) Agent and/or Address for Service

**Reddle & Grose
16 Theobalds Road, London, WC1X 8PL,
United Kingdom**

(54) Washable water and dust binding service mat with a pile of synthetic yarn

(57) A washable water and dust binding service mat with a pile and having a rubber or plastics backing to which the pile has been fixed together with a primary tissue or primary textile, the pile consisting of tufts of synthetic yarn is disclosed. The synthetic yarn from which the tufts have been made is a three-ply folded yarn, and thereby is achieved a substantial increase in the ability of retaining water and an increase of the ability to hide and accumulate dust.

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WASHABLE WATER AND DIRT BINDING SERVICE MAT
HAVING A PILE OF SYNTHETIC YARN

The invention relates to a washable water and dirt binding service mat having a pile and a rubber or plastics backing layer to which the pile has been secured together with a primary textile or primary tissue, said pile consisting of synthetic yarn nops.

From Danish patent No. 150.061 is known such a pile mat wherein the yarns used for the pile are synthetic and therefore they have a lower adhesion coefficient to water than e.g. wool and cotton fibres, and consequently such service mats in general have a smaller water retentiveness than service mats of which the pile is of wool or cotton fibres. It has been attempted, cf. the above patent, to increase the water absorption of such service mats and water retentiveness by using a non-woven primary textile of synthetic fibres, where the primary textile has a thickness of 1-5 mm after DIN 53855 and 54316, whereby a substantial increase of the water retentiveness of the service mat at the expense of an increased weight of the primary textile or the primary tissue. Since it became known to use service mats with a pile of synthetic yarn, many different ideas have been tried in order to increase the water retentiveness of such service mats, but apparently so far with no success.

One of the disadvantages and also a rooted prejudice by the prior service mats with a pile of synthetic yarn has been that their water retentiveness could not have been further increased.

Consequently, the purpose of the present invention is to provide a service mat having a pile of synthetic yarn and an increased water retention or absorption capacity, and said purpose has been achieved with a service mat of the kind mentioned above, wherein the synthetic yarn from which the nops are made, is a three-ply twisted yarn.

Thereby it has surprisingly occurred that without increasing the yarn quantity per area unit of the service mat, an increased water retentiveness, sorption or more precise

adsorption has been obtained compared to the prior art service mats having a pile of synthetic yarn, and thus a water retentiveness of almost the same size as obtained for cotton service mats, which by people skilled in the art are considered to be the service mats with the highest obtainable water retentiveness. Just by increasing the number of yarns in the twisted yarn from 2 to 3, the surprising increase of the water retentiveness of the service mat was measured to more than 20% and up to 50% as compared with the water retentiveness of the known nylon pile service mats. Furthermore, it surprisingly occurred that the service mat manufactured according to the invention is also able to hide dust and sand to a larger extent than service mats of two-ply twisted yarn, so that the service mat according to the invention also has a larger sand absorption capacity than prior art service mats of even uncoated synthetic yarn. Said capacity of absorbing sand without a visible indication thereof on the surface of the service mat, is also very important for service mats, partly because the surface of the service mat then appears clean for a longer period of time, and partly because the hidden quantity of sand, at least in its dry condition, considerably increases the water retentiveness of the service mat. By the service mat according to the invention a sand hiding capacity of the service mat of 20 g per square centimeters has been measured, while the corresponding capacity of hiding sand was measured to only 10 g beach sand per 100 square centimeters service mat surface by the prior service mats manufactured of two-ply yarns of same yarn consumption per area unit as applied in the service mat according to the invention.

In a preferred embodiment according to the invention the synthetic fibre applied in the three-ply twisted yarn of a service mat is endless and has a thickness of 15-40, preferably 21 decitex, the fiber number per yarn is 40-100, preferably 68 twisted yarns, the twist multiplier or factor of the three-ply yarn is 180-300, preferably 230 twists per meter, and the yarn number of the three-ply twisted yarn is from 1000 x 3 to 1800 x 3, preferably 1475 x 3 decitex.

The prior art synthetic yarns being used for the manufacture of nops in the production of service mats, is

manufactured by collecting a number of endless fibres into a fibre bundle for a single yarn or single thread which is then twisted to a twisted fiber bundle, a socalled twisted single yarn, said twisted single yarn together with a further corresponding twisted single yarn has been twisted to a two-ply twisted yarn before cutting up into nops for providing the pile in a service mat.

The three-ply twisted yarn according to the invention was made in the same way, apart from the fact that instead of two twisted fibre bundles has been used three twisted fibre bundles for providing the three ply twisted yarn.

By the manufacture of the pile for the service mat according to the invention the number of nops per area unit may be reduced compared to the number of nops per area unit in the prior two-ply pile service mats, so that essentially the same yarn quantity may be used in the service mats according to the invention as in the prior art service mats.

For illustration of the increased water retentiveness achieved, as well as the capacity of hiding beach sand, the service mat according to the invention was compared to a prior art nylon pile service mat having a rubber backing and with 85,680 nops and an applied quantity nylon yarn of 720 grams per square meter, where each nop had a total pile length of 28 mm, and whereby the nops were mounted by a needle technique in a basic texture of 100% polyester. The prior art service mat had a fiber of a thickness of 21 decitex and a number of 68 fibres per twisted fibre bundle, i.e. per single yarn for the two-ply twisted yarn. The yarn number was 1430 x 2 decitex, and the twist factor for the two-ply twisted yarn was about 230 twists per meter. The measured water retentiveness of this prior art service mat in relation to the measuring results of the best known cotton pile service mat was here about 50%, and the capacity of the service mat to hide sand was 10 g beach sand per 100 square centimeters.

For comparison with the prior art service mat a service mat according to the invention was manufactured, which service mat also had a basic texture of 100% polyester, nylon nops of a total cut-pile length of 28 mm and the same fiber thickness of

CLAIMS

1. A washable water and dirt binding service mat having a pile and a rubber or plastics backing layer to which the pile is secured together with a primary tissue or primary textile, the pile consisting of synthetic yarn nops, the synthetic yarn of which is a three-ply twisted yarn.
2. A service mat according to claim 1, in which the synthetic fibre in the three ply twisted yarn is endless.
3. A service mat according to claim 1 or 2 in which the synthetic fibre in the three ply twisted yarn has a thickness of from 15 to 40 decitex.
4. A service mat according to any preceding claim in which the synthetic fibre in the three ply twisted yarn has a thickness of 21 decitex.
5. A service mat according to any preceding claim in which the fibre number per yarn is from 40 to 100.
6. A service mat according to any preceding claim in which the fibre number per yarn is 68.
7. A service mat according to any preceding claim in which the first factor of the three ply twisted yarn is from 180 to 230 twists per metre.
8. A service mat according to any preceding claim in which the twist factor of the three ply twisted yarn is 230 twists per meter.
9. A service mat according to any preceding claim in which the yarn number of the three ply twisted yarn is from 1000 x 3 to 1800 x 3 decitex.

10. A service mat according to any preceding claim in which the yarn number of the three ply twisted yarn is 1475 x 3 decitex.

11. A service mat substantially as described.